APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/438,184	11/11/1999	RON MCCABE	1735.2.2	8995

20575	7590	12/16/2005		

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EXAMINER
DINH, DUNG C

ART UNIT	PAPER NUMBER
2153	

DATE MAILED: 12/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/438,184	MCCABE ET AL.
	Examiner	Art Unit
	Dung Dinh	2153

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>28 November 2005</u>.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>6 and 27-45</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>6, 27-45</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

U.S. Patent and Trademark Office

PTOL-326 (Rev. 7-05)   Office Action Summary   Part of Paper No./Mail Date 20051212

DETAILED ACTION

The Board of Appeal reversed the Examiner *pro forma* and

rejected the appealed claims under 35 USC 112 second paragraph.

Applicant filed an amendment on 11/28/2005.

The amendment overcomes the 112 second paragraph rejection.

The following is a final action caused by that amendment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103(a) which
forms the basis for all obviousness rejections set forth in this
Office action:

> *(a) A patent may not be obtained though the invention is
> not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the
> subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject
> matter pertains. Patentability shall not be negatived by
> the manner in which the invention was made.*

Claims 6 and 27-39, 41-45 are rejected under 35 U.S.C. 103

as unpatentable over Staheli et al. US patent 5,537,533 and

further in view of Double-Take, and Official Notice.

As per claims 6, Staheli teaches a computer system for

mirroring data comprising:

a host (fig.1 server 10);

data mirroring unit (fig.1 DTU 30) configured to receive

data from the host (col.9 lines 47-50), the local mirroring unit

including:

a meta-block generator (fig.2 link interface 34, col.11

line 60 to col.12 line 30, fig.3 'calculate check sum and header

for a block of data') to generate a meta-data block for the data

from the host,

a buffer configured to store the data from the host and

meta-block (col.12 lines 15-30),

an interface (fig.2 server interface 32) configured to

emulate a storage device coupled to the host, independent of the

operating system of the host (col.10 lines 22-29),

a plurality of remote mirroring units including a server

(fig.1 DTU 40 and server 12. Even thought the fig 1 shows only

one remote DTU and server, col.14 lines 54-57 suggests plural

server may be used),

a plurality of journey links configured to couple the local

mirroring unit to the remote mirroring units (col.12 lines 49-

63), the remote mirroring units (fig.1 DTU 40) directly coupled

to the respective journey link (fig.1 link 50).

Staheli does not teach the remote server being TCP server

and the mirroring unit include a TCP client.

However, in similar field of invention, Double-take teaches
an improved data mirroring system by having wide area network
journey line to connect to remote mirroring unit (p.7 Affordable
- "Double-Take runs over existing network links", p.9 Tolerant -
"wide area connections ..."). It is apparent that the local
unit would act as a client to send data for storage, and the
remote unit would act as a server to accept the data for
storage. Double-Take does not specifically state TCP/IP
protocol is used. However, Official Notice is taken that it is
well known in the art at the time of the invention to use TCP/IP
over wide area network (WAN) and that the Internet (which is a
WAN) uses TCP/IP protocol. Hence, it would have been obvious
for one of ordinary skill in the art to use TCP/IP because it
would have enabled the system to mirror data over existing wide
are network such as the Internet.

Double-Take further teaches the improvement including
multiplicity characteristic in which the system provides many-
to-one and one-to-many mirroring (see page 7 "Flexible" and page
13). Hence, it would have been obvious to have plurality of
remote mirroring units because it would have increased the
flexibility for mirroring and reliability of the mirrored data.

As per claim 27, Staheli teaches a data mirroring system

comprising:

a network server (fig.1 server 10);

a local data mirroring unit (fig.1 DTU 30), the local

mirroring unit including:

an interface (fig.2 server interface 32) configured to

emulate a storage device coupled to the respective server

(col.10 lines 22-29), configured to receive data from the

respective server (col.9 lines 47-50),

a meta-block generator (fig.2 link interface 34, col.11

line 60 to col.12 line 30, fig.3 'calculate check sum and header

for a block of data') to generate a meta-data block for the data

from the host,

a non-volatile buffer configured to store the data from the

host and meta-block (col.11 lines 10-15),

a spoof packet generator (col.13 lines 19-25),

a remote mirroring unit at a remote location(fig.1 DTU 40)

including a nonvolatile storage (see col.9 lines 32-33, fig.2

NVB 66, col.11 lines 10-15) configured to receive mirroring data

from the local mirroring unit; and

a plurality of journey links configured to couple the local

mirroring unit to the remote mirroring unit (col.12 lines 49-

63).

Staheli does not specifically disclose a plurality of local mirroring units. However, Staheli suggested having plurality of servers [See Staheli col.14 lines 54-57 "additional servers may be employed"]. Furthermore, it is well known in the art for a local network to have plurality of servers serving different contents. In similar field invention, Double-Take further teaches an improved mirror system including multiplicity characteristic in which the system provides many-to-one and one-to-many mirroring (see page 7 "Flexible" and page 13). Hence, having plurality of local servers and corresponding local remote unit would have been obvious variation from the teaching of Staheli. Once of ordinary skill in the art would have motivated to provide plurality of local servers with corresponding local mirroring units because it would have distributed network server functions among plural computing devices and avoided total shutdown by failure of a single node.

As per claims 28-29, Staheli teaches each mirroring unit has a non-volatile storage partition inform of a hard disk for storing data from the respective local mirroring unit(col.11 lines 10-15).

As per claim 30, Staheli teaches the hard disk is bootable (see fig.2, col.11 lines 4-10).

As per claims 31-32, Staheli does not specifically disclose the non-volatile storage being a RAID and hot-swappable. Official notice is taken that RAID with hot-swappable drive is well known in the art at the time of the invention. It would have been obvious for one of ordinary skill in the art use a hot-swappable RAID for each of the local mirroring unit because it would have provide larger storage capacity and reliability.

As per claim 33, Staheli teaches the severs can have different operating systems (col.9 lines 1-11).

As per claims 35-37, official notice is taken that it is well known in the art to use SCSI, fibre channel, and USB for storage subsystem (see for example applicant admitted prior art on p.9). Each bus has its advantages and disadvantages. The type of bus used would clearly have been a matter of design choice.

As per claims 38, Staheli teaches using Ethernet connection for the journey link (col.12 line 55).

As per claim 39, Staheli does not specifically discloses using TCP connection. Double-take teaches improving data mirroring system by having wide area network journey line to connect to remote mirroring units (p.7 Affordable - "Double-Take runs over existing network links", p.9 Tolerant - "wide area connections ..."). Double-Take does not specifically state

TCP/IP protocol is used. However, Official Notice is taken that
it is well known in the art at the time of the invention to use
TCP/IP over wide area network (WAN) and that the Internet (which
is a WAN) uses TCP/IP protocol. Hence, it would have been
obvious for one of ordinary skill in the art to use TCP/IP
because it would have enabled the system to mirror data over
existing wide are network such as the Internet.

As per claim 41, Staheli teaches the local mirroring unit
emulate a storage device coupled to the respective network
server, independent of the operating system of the server
(col.10 lines 22-29).

As per claims 42-45, it is apparent that the remote mirror
units and primary servers of the Staheli's system as modified
can be ten or hundred of miles from each others (e.g. over wide
area network, the Internet). It would have been obvious for one
of ordinary skill in the art to place the mirroring units and
the network servers miles distance from each other to increase
likelihood of survival from a local disaster.

**Claim 40 is rejected under 35 U.S.C. 103 as unpatentable
over Staheli et al. US patent 5,537,533 and Double-Take, and
further in view of FrameRunner.**

As per claim 40, Staheli does not specifically teaches the remote mirroring unit not coupled to a server. However, in similar filed of invention, FrameRunner teaches an improved data mirroring system by using serverless destination where the remote mirroring unit is not connected to a dedicated server. Mirrored data is send directly between storage units without the host involvement. This improvement allows any type of computer system to have mirroring capability with minimal impact to the overall system performance. (See the last paragraph on page 2 - "No Host Intervention"). Hence, one of ordinary skill in the art would have been motivated to combine the teaching of FrameRunner to Staheli because it would have reduced cost of having a server at the remote node and reduced maintainent cost by having fewer devices to maintain.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened
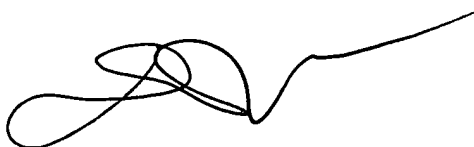
statutory period, then the shortened statutory period will

expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated

from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than

SIX MONTHS from the mailing date of this final action.

        Any inquiry concerning this communication or earlier
communications from the examiner should be directed to Dung Dinh
whose telephone number is (571) 272-3943. The examiner can
normally be reached on Monday-Friday from 7:00 AM - 3:00 PM.
        If attempts to reach the examiner by telephone are
unsuccessful, the examiner's supervisor, Glenton Burgess can be
reached at (571) 272-3949.
        The fax phone number for the organization where this
application or proceeding is assigned is 571-273-8300.
        Information regarding the status of an application may be
obtained from the Patent Application Information Retrieval
(PAIR) system. Status information for published applications
may be obtained from either Private PAIR or Public PAIR. Status
information for unpublished applications is available through
Private PAIR only. For more information about the PAIR system,
see http://pair-direct.uspto.gov. Should you have questions on
access to the Private PAIR system, contact the Electronic
Business Center (EBC) at 866-217-9197 (toll-free).

Dung Dinh
Primary Examiner
December 12, 2005